
Wheelchairs —

Part 5:
**Determination of dimensions, mass
and manoeuvring space**

Fauteuils roulants —

*Partie 5: Détermination des dimensions, de la masse et de l'espace
de manoeuvre*



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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 7176-5 was prepared by Technical Committee ISO/TC 173, *Assistive products for persons with disability*, Subcommittee SC 1, *Wheelchairs*.

This second edition cancels and replaces the first edition (ISO 7176-5:1986) which has been technically revised.

ISO 7176 consists of the following parts, under the general title *Wheelchairs*:

- *Part 1: Determination of static stability*
- *Part 2: Determination of dynamic stability of electric wheelchairs*
- *Part 3: Determination of effectiveness of brakes*
- *Part 4: Energy consumption of electric wheelchairs and scooters for determination of theoretical distance range*
- *Part 5: Determination of dimensions, mass and manoeuvring space*
- *Part 6: Determination of maximum speed, acceleration and deceleration of electric wheelchairs*
- *Part 7: Measurement of seating and wheel dimensions*
- *Part 8: Requirements and test methods for static, impact and fatigue strengths*
- *Part 9: Climatic tests for electric wheelchairs*
- *Part 10: Determination of obstacle-climbing ability of electrically powered wheelchairs*
- *Part 11: Test dummies*
- *Part 13: Determination of coefficient of friction of test surfaces*
- *Part 14: Power and control systems for electrically powered wheelchairs and scooters — Requirements and test methods*

- *Part 15: Requirements for information disclosure, documentation and labelling*
- *Part 16: Resistance to ignition of upholstered parts — Requirements and test methods*
- *Part 19: Wheeled mobility devices for use as seats in motor vehicles*
- *Part 21: Requirements and test methods for electromagnetic compatibility of electrically powered wheelchairs and motorized scooters, and battery chargers*
- *Part 22: Set-up procedures*
- *Part 23: Requirements and test methods for attendant-operated stair-climbing devices*
- *Part 24: Requirements and test methods for user-operated stair-climbing devices*
- *Part 26: Vocabulary*

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Introduction

The purpose of this part of ISO 7176 is to provide technical definitions together with appropriate measurement procedures for measuring important dimensions and masses of manual wheelchairs and electrically powered wheelchairs including scooters, which can be used to estimate the appropriateness for a given environment.

A new approach is used for the pre-selection of the reference size from a wheelchair model with a range of various dimensions by introducing reference dimensions of the intended occupant. This new approach ensures repeatable and comparable test results.

The information in this part of ISO 7176 is intended for three main reader groups:

- prescribers and occupants of wheelchairs;
- architects and public authorities;
- manufacturers, wheelchair providers, clinicians and test laboratories.

Features that are important to wheelchair occupants, architects and public authorities, such as overall dimensions and the estimation of the space needed and general manoeuvrability, are contained in Clause 8. Values for the different features are disclosed in the wheelchair's specification sheet. The values can be used to determine, before purchase, the wheelchair's suitability in relation to specific requirements and needs.

The technical features of a wheelchair which are of importance to manufacturers, wheelchair providers, clinicians and test laboratories, such as items to be considered when manufacturing, setting up, adjusting, repairing or testing wheelchairs, are included in Annex A.

Technical Report ISO/TR 13570-1^[1] is also available, giving a simplified explanation of the different parts of ISO 7176.

Technical Report, ISO/TR 13570-2^[2], is under consideration.

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Wheelchairs —

Part 5: Determination of dimensions, mass and manoeuvring space

1 Scope

This part of ISO 7176 specifies methods for the determination of wheelchair dimensions and mass.

This includes specific methods for the determination of outside dimensions when the wheelchair is occupied by a reference occupant and the required manoeuvring space needed for wheelchair manoeuvres commonly carried out in daily life.

This part of ISO 7176 specifies requirements for the disclosure of the dimensions and masses and contains five informative annexes.

Annex A specifies methods for the determination of technical dimensions that can be important to the performance of the wheelchair.

Annex B provides detailed information about pivot width and reversing width.

Annex C provides detailed information about the turning diameter.

Annex D provides details on determining the wheelchair longitudinal axis and wheelchair centre-point.

Annex E provides technical guidelines and recommendations for many of the measurements specified to facilitate improved understanding, design and construction of wheelchairs.

This part of ISO 7176 is applicable to manual wheelchairs and electrically powered wheelchairs (including scooters).

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 7176-7, *Wheelchairs — Part 7: Measurement of seating and wheel dimensions*

ISO 7176-11, *Wheelchairs — Part 11: Test dummies*

ISO 7176-13, *Wheelchairs — Part 13: Determination of coefficient of friction of test surfaces*

ISO 7176-15, *Wheelchairs — Part 15: Requirements for information disclosure, documentation and labelling*

ISO 7176-22:2000, *Wheelchairs — Part 22: Set-up procedures*

ISO 7176-26, *Wheelchairs — Part 26: Vocabulary*